

WATER LICENCE INSPECTION FORM

☒ Original

☐ Follow-Up Report

Licensee	Licensee Representative
Hamlet of Igloolik	Bhabesh Roy
Licence No. / Expiry	Representative's Title
3BM-ILG1520	Municipal Engineer
Land / Other Authorizations	Land / Other Authorizations
Date of Inspection	Inspector
July 10, 2018	Joseph Monteith & Jonathan Mesher
Activities Inspected	
<input type="checkbox"/> Camp	<input type="checkbox"/> Drilling
<input type="checkbox"/> Roads/Hauling	<input type="checkbox"/> Mining
	<input checked="" type="checkbox"/> Other: Potable Water Source, Solid Waste Facility, Sewage Disposal Facility
	<input type="checkbox"/> Construction
	<input type="checkbox"/> Reclamation
	<input type="checkbox"/> Fuel Storage
	<input type="checkbox"/> Other:

Conditions:	A- Acceptable	U-Unacceptable	C-Concern	NI-Not Inspected	NA- Not applicable
PART:				Condition	Observation No.*
A: SCOPE, DEFINITIONS AND ENFORCEMENT				A	
B: GENERAL CONDITIONS				C	
C: CONDITIONS APPLYING TO SECURITY				NI	
D: CONDITIONS APPLYING TO WATER USE				A	1-13 +24 & 25
E: CONDITIONS APPLYING TO WASTE DISPOSAL AND MANAGEMENT				A	14-23
F: CONDITIONS APPLYING TO MODIFICATIONS				NA	
G: CONDITIONS APPLYING TO CONSTRUCTION				A	
H: CONDITIONS APPLYING TO EMERGENCY RESPONSE AND CONTINGENCY PLANNING				A	
I: CONDITIONS APPLYING TO ABANDONMENT, RECLAMATION AND CLOSURE PLANNING				NI	
J: CONDITIONS APPLYING TO MONITORING				A	
SCHEDULES				A	
*The observation number corresponds with specific comments provided below.					
Samples taken by Inspector:	Location(s): Latitude: 69°23’N and Longitude: 81°46’W				
<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No					

SECTION 1	<input type="checkbox"/> Comments (s. __)	<input type="checkbox"/> Non-Compliance with Act or Licence (s. __)	<input type="checkbox"/> Action Required (s. __)
BACKGROUND <p>On February 16, 2016 the Nunavut Water Board (NWB) approved an Amendment to expand and rehabilitation of the Sewage Lagoon Facility.</p> <p>On September 1, 2017 the NWB approved a second Amendment to allow for the expansion of an existing potable water supply reservoir, replacement of an intake line that transmits water from the South Lake source to the Hamlet’s water supply reservoir, the construction of a new truck-fill station, and the inclusion of Fish Lake as an alternative water source to the scope of the Existing Licence. Details included in the Application to amend the Existing Licence indicate that in 2015 the Hamlet experienced a shortage in the reservoir’s over-winter water storage due to anoxic conditions at the South Lake water source. To protect the public’s safety, the Government of Nunavut – Department of Health (GN-DOH) advised that use of the South Lake water source should be temporarily discontinued. The Hamlet accepted the GN-DOH advice, and it decided to use Fish Lake as its water supply source until the integrity of the South Lake source was restored.</p> <p>The Hamlet indicated in its Application to minimize the possibility of similar shortages in the future, it is proposing, to expand the reservoir’s annual over-winter storage capacity from 79,000 m3 to 102,800 m3 as well as upgrade some of the other structures/equipment associated with the Water Supply Facilities. This aspect of the amendment application was decided to keep the existing authorized amount of 81,208 cubic metres.</p> <p>Relevant infrastructure for the Water Use and Waste Disposal Facilities include a freshwater intake pump, reservoir, truck fill station, and a three cell sewage exfiltration lagoon system with a wetland, an older fourth sewage cell constructed prior to the three cell lagoon systems, domestic landfill, and metallic waste landfill.</p> Inspector Statement <p>A Water Licence Inspection was conducted on July 10, 2018 in the Hamlet of Igloolik, Nunavut, Qikiqtani Region, to verify compliance with Water Licence 3BM-IGL1520. Sites inspected included the freshwater lake (South Lake), Water Treatment Plant, Water Storage Reservoir, Sewage Lagoon, Hazardous Materials Storage Area and</p>			



the Solid Waste Disposal Facility.

General Condition

On May 9, 2018 Richard Dwyer, Nunavut Water Board, Manager of Licencing emailed Water Resource Officer(WRO) Monteith a copy of the Hamlet of Igloolik's Annual Report.

On May 14, 2018 Richard Dwyer, Nunavut Water Board, Manager of Licencing emailed Water Resource Officer(WRO) Monteith a copy of the Hamlet of Igloolik's Annual Report Technical Review, and detailed the need for additional information to meet the following requirement of the Licence such as Part H, Item 1, Part H, Item 2, Part H, Item 3. Richard Dwyer recommended the proponent provide that information in the 2018 Annual Report, and all future reports. It was also noted that the licensee is also required to submit a number of plans and reports once the construction and commissioning is complete as per Amendment No. 1, and Amendment No. 2.

Water Use and Related Structures

South Lake Pump House (photo 1)

1. The pump house is used as the truck fill station at South Lake. A hose with a fish mesh screen is attached to the pump house with a water pump during transfer to trucks (photo 2).
2. Trucks recharge at the South Lake pump house. Trucks drive to the Water Storage Reservoir at the Water Treatment Facility. It takes 1 month to fill the man-made reservoir. (Photo 3).
3. A new pipe that meanders inland from Fish Lake to the Water Storage Facility has the capability to attach a water pump to the pipe, and transfers water to the Water Storage Facility. At the time of the inspection it was out of commission.
4. Signs of a leak from the pipe at Global Position System (GPS) Coordinates: Latitude 69° 21.248'N, Longitude 81° 50.439'W that leads to a water course, which eventually leads to the ocean. Signs of erosion, and sedimentation. (photo's 4, 5, & 6). Leak appears to have been when a bypass hose was installed to bleed out any still water within the pipe at its low point to avoid freezing.

Water Treatment Facility & Water Storage Reservoir (photo 7)

5. At the time of the inspection, the Water Treatment Facility was locked. No observation of a water metre. (Photo 8).
6. The Water Treatment Facility has two intake pipes that extend 9 metres into the Water Storage Reservoir.
7. The Water Treatment Facility has an auto-chlorine injector, and 3 types of filters.
8. Water is dispersed to the public by trucked service from the Water Treatment Facility (Photo 9).
9. The chlorine injection requires 20 minutes in the truck to properly treat the water, as per Health Regulations
10. The old Water Treatment Facility has auto-chlorine injectors. (Photo 10).
11. The Water Storage Reservoir goes to a depth of 10 metres, and can contain a total of 100,000 cubic metres of freshwater (See photo 11).
12. The fencing appears to have collapsed on one side. (Photo 12).
13. Pipe enters Water Storage Reservoir (Photo 13).

Solid Waste Facility (See photo 14)

14. The Solid Waste Facility manages their waste by segregating the Bulk Metals, Woods, Open Pit Burning and Capping, and Hazardous Waste. The site doesn't have any fencing. One section of the Bulk Metal and Hazardous Waste section are merged together and not segregated.
15. Open Pit Burning at the Solid Waste Facility has no fencing. Does not appear to do any capping of the ash, but has created a berm using a mix of gravel and the ash from the burning of garbage. (Photo's 15 &16).
16. Hazardous Waste Facility has a couple of sea cans, full, open, and numerous amounts of hazardous waste such as batteries, paint cans, waste oil drums exposed to the elements laying across the landscape outside. (Photo's 17, 18, & 19). Bulk Metal Storage Facility (Photo's 20 &21).
17. Bulk Wood Storage (Photo 22).
18. Hazardous Waste and contaminated soil in contact with Fresh Water (Photo 23).

Sewage Disposal Facility (Photo 24)

19. The Sewage Disposal Facility is a 4 cell facility, Cells 1, 2, & 3 each have an HDPE Liner. Fencing appears to be in good condition (Photo 25).
20. Freeboard 3-4 metres, spill way, and fencing appear to be in good condition (Photo 25).
21. Newly built sewage lagoon (Photo 26).
22. On October 3, a telephone notification from the Igloolik foreman of a decant that would be occurring over the long weekend. WRO Monteith requested that in future all decant notification be notified by way of email. 10 days in advance of decant as required by the license.
23. On October 25, 2018 William Toonoo, Municipal Technical Clerk, GN-CGS emailed WRO Monteith a copy of Igloolik's "Delivery Summary by Month and Year". Showing a total of 40,810,960 Litres delivered between the



months of January to September 2018. This figure should represent the amount discharged into the Sewage Disposal Facility (see photo 26). The document in photo 27, also details out how the water consumption rates is also what is discharged. (Photo 27).

Water Consumption Reports

24. On October 25, 2018 William Toonoo, Municipal Technical Clerk, GN-CGS emailed WRO Monteith a copy of Igloolik’s “Delivery Summary by Month and Year”. Showing a total of 40,810,960 Litres delivered between the months of January to September 2018.
25. On October 5, 2017 WRO Jonathan Mesher, Qiqiktani Region conducted an inspection of Igloolik’s water use and related infrastructure. In his inspection report it was noted that an exceedance for water use had occurred during the expansion of the potable water source. In his records he noted that the licensee was permitted to use 299 cubic metres of water per day or 81,208 cubic metres of water per annum. In the 2016 Annual report it was noted that a total amount of 50,023,000.10 litres of water use, and in 2017, 53,083285.70 litres of water use. During the expansion of the reservoir the licensee emptied and filled the reservoir in one season, along with emptying the pipe leading from south lake to the reservoir therefore we believe that more than 53,083285.70 litres was used total, and 299 cubic metres of water per day. On May 9, 2018 Bhabesh Roy replied to WRO Monteith’s email sent on April 24, 2018 articulating the difference in calculation with a couple of attachments (Photo’s 28 & 29), listing the total amount consumed to 50,023,000.10 Litres, when if fact that amount consumed should be higher than what was reported, as articulated in the 2017 annual report (Photo 28) which estimates a withdrawal of 136,880,000 Litres of water. The original amount reported didn’t take into consideration the transfer of fresh water during the testing of the reservoir expansion, also calculations for water usage come from the amounts being delivered to the buildings which only accounts of water usage for residential and commercial uses. This type of water usage often fails to account for dust suppression, trucks emptied and anything else that isn’t being delivered by the water trucks. It has been mentioned that the calculation for water withdrawal should be conducted at the withdrawal point, using a water meter.

SECTION 2

☐ Comments

☐ Non-Compliance with Act or Licence

☒ Action Required

The following information is a summary of the Actions Required by the licensee to promote and ensure compliance:

-Maintain fencing at Water Storage Reservoir.

-Segregate the Bulk Metals, and Hazardous Waste.

-Consolidate all Hazardous Waste and store in such a way as to protect water from mixing with the hazardous waste.

-Articulate how you calculate water consumption

-Keep Annual Reports accurate, and take into consideration all withdrawal of fresh water obtained from at the Water Supply Facilities using a water meter.

SECTION 3

☐ Comments

☒ Non-Compliance with Act or Licence

☐ Action Required

PART B: GENERAL CONDITIONS

1. The Licensee shall file an Annual Report on the Appurtenant Undertaking with the Board no later than March 31 of the year following the calendar year being reported, containing the following information:

a. an executive summary as required by Part B, Item 8;

b. tabular summaries of all data generated under the “Monitoring Program”;

c. **the daily, monthly and annual quantities in cubic metres of fresh water obtained at the Water Supply Facilities;**

Part C:Conditions Applying to Water Use

2. The annual quantity of water used for all purposes shall not exceed 81,208 cubic metres annually or a daily quantity of water for all purposes shall not exceed 299 cubic metres.

5. The Licensee shall not cause erosion to the banks of any body of water and shall provide necessary controls to prevent such erosion.

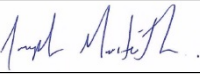
6. Sediment and erosion control measures shall be implemented prior to and maintained during the operation to prevent entry of sediment into water.

Part D: Conditions Applying to Waste Disposal

7. The Licensee shall segregate and store all hazardous materials and/or hazardous waste within the Modified Solid Waste Disposal Facilities in such a manner as to prevent the deposit of deleterious substances into any water, until such a time that the materials have been removed for proper disposal at an approved facility.

Part E: Conditions Applying to Modification and Construction

6. The Licensee shall implement and maintain sediment and erosion control measures prior to and during activities carried out under this Part, to prevent the release of sediment and minimize erosion.

Licensee or Representative	Inspector's Name
Bhabesh Roy	Joseph Monteith
Signature	Signature
	
Date	Date
	December 4, 2018

CC: Licensing Department, NWB
Justin Hack, Manager of Field Operations, INAC

PHOTO LOG

Date	Camera	Inspector	
July 10, 2018	Nikon Coolpix	Joseph Monteith	
Photo Log #1		Location	
Photo 1		Igloolik	
			
Description: South Lake in the background, with the pump house in the mid ground, and piping in the foreground			



Photo Log #	Location
Photo 2	Igloolik



Description: Pump house recharges Trucks with the fresh water from South Lake.

Photo Log #	Location
Photo 3	Igloolik



Description: Trucks recharge Water Storage Reservoir



Photo Log #	Location	
Photo 4	N69° 21.248'	W81° 50.439'
		
Description: Location of Pipe with possible leak, a bypass hose installed at the low point, to bleed out any still water from freezing when not in use. GPS Coordinates: Latitude 69° 21.248'N, Longitude 81° 50.439'W		

Photo Log #	Location	
Photo 5	N69° 21.248',	W81° 50.439'
		
Description: Location of spill on pipeline in-between pump house, and reservoir. At GPS Coordinates location noted above photo.		



Photo Log #	Location	
Photo 6	N69° 21.248'	W81° 50.439'
<div><div></div><div></div><div></div></div>		
Description: Location of spill on pipeline in-between pump house, and reservoir. At GPS Coordinates location noted above photo.		

Photo Log #	Location
Photo 7	Igloolik
<div><div></div><div></div><div></div></div>	
Description: Water Storage Reservoir, Water Treatment Facility, and Water Truck Pump Facility	



Photo Log #

Location

Photo 8

Igloolik



Description: Water Truck Pump and water treatment Facility

Photo Log #

Location

Photo 9

Igloolik



Description: Water Truck Pumping Hose at Water Treatment Facility



Photo Log #

Photo 10

Location

Igloolik



Description: Old Water Treatment Facility

Photo Log #

Photo 11

Location

Igloolik



Description: Water Storage Reservoir



Photo Log #	Location
Photo 12	Igloolik
	
Description: damaged fence at Water Storage Reservoir	


Photo Log #	Location
Photo 13	Igloolik
	
Description: Water Storage Reservoir	



Photo Log #	Location
Photo 14	Igloolik
<div><div></div><div>Description: Solid Waste Facility with sign in both Official Languages of Nunavut</div></div>	

Photo Log #	Location
Photo 15	Igloolik
<div><div></div><div>Description: Open Burning, Berms in the background of this section. No Fencing, no capping.</div></div>	



Photo Log #	Location
Photo 16	Igloolik
	
Description: Burn Garbage is piled up, no capping. No Fencing	

Photo Log #	Location
Photo 17	Igloolik
	
Description: Old Waste Oil Drums within a bermed area – berm is full. Wall was taken down to allow for access	



Photo Log #

Photo 18

Location

Igloolik



Description: Hazardous Waste Sea Can is full, and spilling out, waste oil drums, batteries, and paint lay out in the elements

Photo Log #1

Photo 19

Location

Igloolik



Description: Batteries lay outside exposed to the elements.



Photo Log #

Location

Photo 20

Igloolik



Description: Bulk Metal Waste merged with Hazardous Waste. The sea can provides separation.

Photo Log #

Location

Photo 21

Igloolik



Description: Bulk Metal Waste merged with Hazardous Waste. Hazardous Waste observed throughout the area.



Photo Log #	Location
Photo 22	
	
Description: Scrap Woods segregated into own pile	

Photo Log #	Location
Photo 23	Igloolik
	
Description: Hazardous Waste, and Contaminated Soil in contact with fresh water.	



Photo Log #

Location

Photo 24

Igloolik



Description: Fencing newly installed, discharge point at West side of Sewage Lagoon cells.

Photo Log #

Location

Photo 25

Igloolik



Description: Spill way into lagoon, free board is more than 1 metre.



Photo Log #

Photo 26

Location

Igloolik



Description: Newly constructed sewage lagoon

Photo Log #

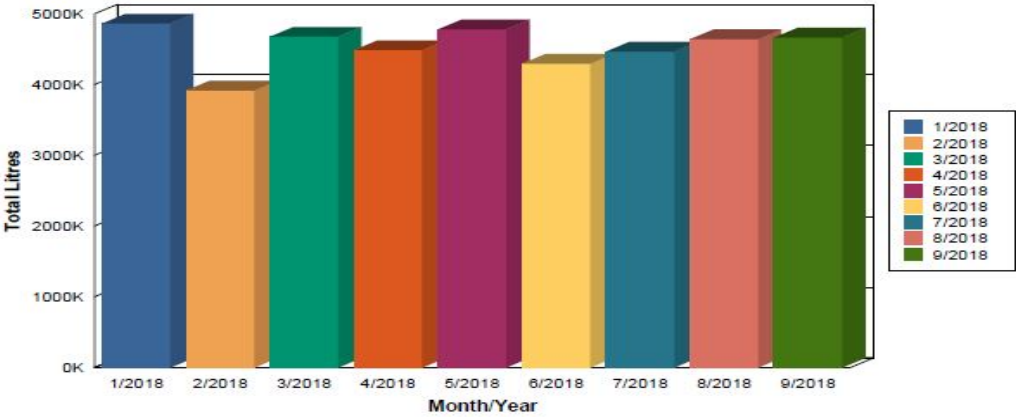
Photo 27

Location

Igloolik

Delivery Summary By Month and Year

Printed on: Oct 25 2018 @ 9:12:47AM
Page: 1 of 1



Month / Year	Litres Delivered
January 2018	4,864,981.40
February 2018	3,917,995.90
March 2018	4,679,869.70
April 2018	4,490,441.30
May 2018	4,781,640.10
June 2018	4,297,788.70
July 2018	4,469,678.60
August 2018	4,642,763.80
September 2018	4,665,800.50
Grand Total:	40,810,960.00

Description: Water Consumption Report Titled Delivery Summary By Month and Year. 40810960.00 Litres between January and September 2018.



Photo Log #

Location

Photo 28

Igloolik

ANNUAL REPORT
FOR THE HAMLET OF IGLOOLIK, 2017

YEAR BEING REPORTED: 2017

The following information is compiled pursuant to the requirements of Part B, Item 1 of Water Licence # 3BM –IGL1520 issued to the Hamlet of Igloolik.

i) – iii)

tabular summaries of all data generated under the "Monitoring Program"; monthly and annual quantities in cubic metres of freshwater obtained from all sources; monthly and annual quantities in cubic metres of each and all wastes discharged;

Attached are quantities of water used as reported in our On Tap Water Delivery System and the estimated discharge of sewage waste based on quantities used...?

Month Reported	Quantity of Water Obtained from all sources (litres)	Quantity of Sewage Waste Discharged (Estimated)
January 2017	4,616,668.40	Same
February 2017	4,413,932.20	Same
March 2017	4,357,648.40	Same
April 2017	3,847,452.60	Same
May 2017	4,100,935.30	Same
June 2017	3,391,878.20	Same
July 2017	3,889,061.30	Same
August 2017	3,857,935.00	Same
September 2017	4,390,755.00	Same
October 2017	4,549,730.80	Same
November 2017	4,302,961.10	Same
December 2017	4,304,041.20	Same
ANNUAL TOTAL	50,023,000.10	50,023,000.10

Note: The water consumption volume is considered equal to the discharge volume

Page 1 of 4

Description: 2017 Water Consumption Report showing 50023000.10 litres consumed, re-submitted calculated totals equals 42472999.5 Litres

Photo Log #1

Location

Photo 29

Igloolik

ANNUAL REPORT
FOR THE HAMLET OF IGLOOLIK, 2017

because there is no meter at the end of the discharge pipe.
The Practical scenario was different.
The water storage reservoir was expanded during last summer. During construction, the reservoir was made empty. Once the construction was completed, it was filled up. The estimated quantity of water required was about 126,440,000litres. Also during construction, three Trucks were filled daily directly from the south lake for 30days and extracted roughly 10,440,000 litres.
Therefore total extracted volume in 2017 from South lake was estimated about 136,880,000 Litres.

iv.

A summary of modifications and/or major maintenance work carried out on the Water Supply and Waste Disposal Facilities, including all associated structures and facilities;

The construction of the new sewage lagoon cell began in 2016 and will be completed in 2018.
The water intake pipe line was replaced in 2016 and the construction of the new water treatment plant (WTP) and water reservoir were completed in 2017. The water Treatment plant was in testing phase.

v.

A list of unauthorized discharges and summary of follow-up action taken;

The cells of the existing sewage lagoon functioned as exfiltration process. The effluent then partially was treated in the wetland prior to reaching the receiving body. This happened prior to start construction works.

vi.

A summary of any abandonment and restoration work completed during the year and an outline of any work anticipated for the next year;

Once the new solid waste management facility is built and commissioned, the existing site will be abandoned and restored. No abandonment and restoration work was conducted during this reporting year.
In 2017, the rehabilitation of the existing three cells lagoon began. Three cells will be converted into two containment cells lagoon and these are expected to be completed in 2018.

vii.

A summary of any studies requested by the Board that relate to waste disposal, water use or reclamation, and a brief description of any future studies planned;

The water licence was amended to accommodate the expansion of the water Reservoir and construction of the new water treatment plant in order to improve the

Page 2 of 4

Description: articulation of water consumed during the testing of the pipes, and Water Storage Reservoir at the top of the page. Original Page 1 Missing.